DOCUMENT RESUME

ED 200 847 CG 015 079

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TITLE The Effects of Self-Instructional Mediated Learning Modules on Interpersonal and Self-Management Skills: Evaluating an Alternative Method for Delivering Psychological Services.
PUB DATE Jun 80
NOTE 35p.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Audiotape Recordings; Behavioral Objectives; Delivery Systems; *Interpersonal Competence; *Learning Modules; Performance Factors; *Programed Instructional Materials; *Program Effectiveness; Psychological Services; *Self Help Programs; *Skill Development; Videotape Recordings

ABSTRACT

Self-instructional Mediated Learning Modules (MLMs), audiotaped or videotaped units based upon a structured learning approach, may be used by clinics to provide effective, low-cost psychological treatments to large numbers of people. MLMs produced by the Life Skills Training Project focused on interpersonal and self-management skills. Nine experiments were conducted to compare the self-instructional MLM to various placebo control treatments, using undergraduates as subjects. Assertive behavior, knowledge of rights, conversational skills, dating behavior, self disclosure, response to criticism, discriminating between responses, cognitive restructuring, and problem solving were assessed; behavioral performance ratings were used as the primary dependent measure. Self-instructional MLMs were more effective than the placebo treatments in producing higher performance ratings for interpersonal and self-management skills in behavioral role-play situations. Some evidence appeared to be related to generalization, maintenance, and the effects of the target behaviors in achieving desired interpersonal outcomes. MLMs may have promise for advancement of theory and research methods as well as provision of a low-cost delivery system for psychological services. (Author/NRB)

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THE EFFECTS OF SELF-INSTRUCTIONAL MEDIATED LEARNING MODULES ON INTERPERSONAL AND SELF-MANAGEMENT SKILLS -- EVALUATING AN ALTERNATIVE METHOD FOR DELIVERING PSYCHOLOGICAL SERVICES

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June, 1980

CG 015079

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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The Effects of Self-Instructional Mediated Learning Modules on Interpersonal and Self-Management Skills -- Evaluating an Alternative Method For Delivering Psychological Services

INTRODUCTION

There is a great need for effective, low-cost delivery of psychological services and life skills training. There is also a great need for better methods of standardizing treatments in order to increase experimental control during experiments on psychological treatments and skills identification. One promising method of helping meet these needs is through the use of Mediated Learning Modules (MLMs). Mediated Learning Modules (MLMs) are relatively short (30 to 120 minute), self-contained training units organized around a set of limited training objectives in which media (training manuals, audiocassettes, slides, videocassettes, etc.) are the primary mode of training delivery. These MLMs may be entirely self-instructional and they may be arranged into larger instructional units (such as workshops, classes, or training sequences) to meet less limited instructional objectives.

Ideally, this training would be an individualized treatment prescription in response to a comprehensive assessment procedure developed with the treatment alternatives in mind. MLMs can be developed commercially and widely distributed or they can be produced locally in a less polished form. Either alternative can potentially deliver training at a low cost per learner/counselee contact hour. They are not designed to replace traditional psychological services, but to supplement them. This paper is addressed to anyone who might develop or use MLMs including researchers, clinicians, administrators, or teachers. It describes how MLMs were developed, tested, and used at a large university. It describes the content of the modules, the training methods used, and the results of nine experimental studies to test the effectiveness of the MLMs.

Life Skills Training Project and Uses of the Mediated Learning Modules (MLMs)

In Fall, 1975, the author began a project at California State University, Long Beach (CSULB) to develop, test, and use MLMs. The MLMs were developed by a number of Master's thesis students, by Dr. Robert Cash, and by the writer. The graduate students each developed and tested one MLM as part of his/her thesis requirement.

Currently, there are 30 MLMs available 64 hours per week to anyone who wants to use them in the Learning Assistance and Counseling Centers. The MLMs can be fully self-instructional for use by persons who are able and motivated to learn in this manner or used as a supplement to therapy. Psychologists refer

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Send requests for more information to Tom G. Stevens; Counseling Center; California State University, Long Beach; 1250 Bellflower Blvd.; Long Beach, CA 90840. Mediated Learning Modules are also available to institutions for experimental or no charge treatment purposes for the cost of duplication.

students to use MLMs with a special referral form so that they may receive training according to their individual needs between counseling appointments. Therapist time spent on routine training sessions for relaxation training, time management, etc. is reduced. Student ratings of usefulness of the MLMs in actual daily use of the center average about 6-8 on a 1 to 9 rating scale. The MLMs from the center are also used in research, Counseling Center groups, regular classes, special continuing education workshops, and intern training. Also, several other campuses have obtained copies of our MLMs, which can potentially multiply their use.

Life Skills--The Content of the Mediated Learning Modules (MLMs)

The content and training objectives of the 30 MLMs at CSULB may be categorized as follows:

Assertion training. There are 10 MLMs on topics such as assertive requests, empathetic responding, assertive rights, discriminating assertive behavior, dealing with manipulation, refusing unreasonable requests, negotiating, contracting, responding to criticism, sexual communication, and job interviewing.

Establishing relationships. There are seven MLMs on topics such as meeting people, conversational skills, dating, initiating physical sexual approaches, and how to get along in a personal growth group.

Self-management training. There are nine MLMs on topics such as values clarification, goal-setting, problem-solving, behavioral contracting, systematic desensitization, relation training, cognitive restructuring, time-management, and career planning.

Behavioral management. There are three MLMs designed largely for use by parents for helping them manage their children more effectively.

Potential advantages of mediated learning modules (MLMs)

Following are some of the major advantages of using MLMs as a supplement to or replacement for live training.

Quantity and quality of training. Some key life skills in the areas of self-management, interpersonal skills and career planning have already been identified in the psychological literature. Many counselees and other persons are in need of these skills. Dissemination of training from a counseling center where students are seen individually or in small groups is a serious problem. Cost-effective means of training need to be found. Media has been shown to be a less expensive way of providing training for a wide variety of instructional subjects as effectively as live teaching (Jamison, Suppes, and Wells, 1974; Chu & Schramm, 1967; Schramm, 1977). Studies have generally found no differences in learning between Mediated and live presentations of the same material. However, in practice mediated presentations are probably much better planned, prepared, and presented. If media are used, one can justify many more hours of preparation since the ultimate audience is much larger. Salomon and Clark (1977) reexamined the methodology of research on media in education and concluded that on the surface it may seem to make more sense to compare different media by keeping the content identical. However, in fact this approach may keep the researcher from taking full advantage of the media in comparison -- for example -- to live presentations. It is much more practical to present elaborate interpersonal scenes or scenes on location than to bring these settings to the class or vice versa. The effectiveness of symbolic modeling presented via

videotapes and films has also recently been reviewed by Thelen, Fry, Fehrenbach, and Frautschi (1979). They conclude that for a number of therapy-related target behaviors symbolic modeling appears to have a promising future based upon the amount of positive outcomes reported. The target behaviors reviewed include phobias, test anxiety, medical stress, and interpersonal skills. Some of the treatments included in their review are similar to ours. However, very few were designed to be fully self-instructional as ours were.

Quality control of dissemination. One method of training dissemination is for a master trainer to train trainers who train others. This method removes the trainee from the master teacher. If the master teacher were to make an MLM, then he could be sure that each trainee would receive the same quality of training. Quality control is a special problem at a clinical center where the life skill trainers may be interns with high turnover rates.

Research and evaluation of training methods. Problems with replicability of treatment and with keeping extraneous conditions identical across treatment groups are serious in live treatment research. Doing research on treatment methods using mediated treatments is much simpler, cleaner, and more replicable.

Identification of key life skills. Developing a program of MLMs should be done after a literature search for behaviorally specified key life skills. The MLM development program also provides a mechanism for identifying new life skills. Research testing hypotheses about key life skills would vary the content of training as opposed to the method of training. Effects of the training on outcomes in life situations relevant to training could be assessed (e.g. does the learner make more friends, get better grades, etc.).

Availability of Training. When a counselee comes into a counseling center, what are the odds that he can immediately see a therapist who specializes in helping someone with exactly his needs and who can spend several hours with him within the next few days. If he gets in an assertion training group, he may find he has to wait six weeks to get help on the specific problem he came in for. MLMs can be available on a walk-in basis 60-80 hours per week. The potential low-cost factor compared to individual or group treatments could also greatly increase availability of training.

Taking advantage of professional specialization. No one professional can be a specialist in helping each counselee with all of the important needs he brings to the therapist. Yet by having professionals create MLMs in the areas of their strengths, the individual counselee receives the advantages of getting help from a very large team.

Individualization. In group therapy as in the classroom, much time is spent attending to other counselees' needs, hence the group may become involved with many learning experiences that are not completely relevant to the counselee's needs. MLMs should eventually be tied to a comprehensive diagnostic testing system. However, in the meantime simple descriptions of the objectives of the module can help the trainer or learner tailor the training to the learner's needs.

Interinstitutional sharing. Materials developed in one institution or setting can be shared with others. If 20 to 30 agencies or campuses cooperated, the MLM inventory would be greatly increased for all.

Potential Disadvantages of Mediated Learning Modules (MLMs)

Some of the potential disadvantages of MLMs include the inflexibility of

the material within each module, the impersonal atmosphere and contact between the machine and learner, and the need for special equipment to develop and deliver MLM training. Most of these are problems inherent with the use of media. However, some of these problems can be minimized by maintaining a close contact and monitoring of MLM training by the counselor or teacher who referred the person and by the staff in the media center.

Design Features of the CSULB Mediated Learning Modules

A literature search precedes the design of each Mediated Learning Module (MLM) in order to gain information about theory and research relevant to the specific skill area to be taught in the MLM. Then the MLM designer writes the objectives, selects the measurement procedure, writes and initially tests the script, and directs the taping of the MLM by the university Audio-Visual Services. There are a number of design features which are used as a model for the creation of most of the MLMs. They follow:

Key rules and principles stressed. The major points in the presentation of the MLM are key principles, rules, and steps relevant to the skill being taught. This is done to increase generalization and transfer of training to more situations.

Use of positive and negative models and Becker and Engelmann's sequencing principles. When teaching new or complex concepts, a large contrast is used between positive and negative models to increase ease of discrimination. When the trainee is ready for learning more subtle discriminations, the contrast between positive and negative instances is reduced. The negative behaviors modelled are often are often most frequent errors of those in past training. The sequencing principles followed are generally consistent with Becker, Engelmann and Thomas' (1975) suggestions as proposed in their "direct instruction" model which has proved to be so successful in teaching academic skills to elementary children.

Use of behavior rehearsal with or without partners. The interpersonal skills training tapes include instructions which allow for behavior rehearsal with a partner or the use of covert behavior rehearsal if alone. Feedback is provided by partners and by taped models.

Three Phases of Training -- Concept Mastery, Behavior Rehearsal, and Transfer Training. Three phases of learning are emphasized for each new skill being taught.

The Concept Mastery Phase follows a brief introduction designed to arouse learner interest and provide an overview of the MLM. The concept mastery phase goal is to obtain mastery of rules for discriminating desirable from undesirable responses. Rules, principles, or steps are stated and followed by reasons, evidence, and modelled responses. Then a dimension on a rating scale is described and related to the corresponding rule. Various desirable and undesirable responses are presented and the trainees are instructed to practice rating these responses using that rating dimension. Feedback is provided on the tape. They learn how to use a behavior rating instrument with 5-10 scales for each MLM. Each scale is taught separately; then all are practiced together. By the time trainees are ready to begin the Behavior Rehearsal Phase, each should be skilled enough at discriminating desirable from undesirable responses

to give his/her partner good feedback on how well the person is performing the desired behaviors.

During the Behavior Rehearsal Phase the instructions provide for either overt or covert behavior rehearsal. If the person has a partner, the two are urged to use overt rehearsal; if alone, the person rehearses covertly. For each role-playing sequence a hypothetical situation is first described or presented as a cue to the trainee(s). The partners practice their roles, then give feedback to each other in relation to the particular dimension(s) they have been trained to observe during the Concept Mastery Phase of the module. Next they view taped feedback which usually consists of positive and negative modeled responses. Learners are urged to continue practicing until mastery is achieved.

The third phase is the Transfer Training Phase. It was included because of the common research finding that behavior does not appear to transfer well from most learning situations to the person's natural environment. Several methods are used to increase transfer. Rules and guided imagery to help increase discrimination between appropriate and inappropriate use of the new responses are used in a "when to"/"when not to" do it format. Trainees practice, coach, rate, and provide feedback on responses to situations from their own lives. Thus, they conceivably recondition their own responses to naturally occurring situations in their own life. They also learn by coaching their partners.

Another technique to increase transfer is to "innoculate" students and to prepare them for common problems or misbeliefs which may prevent transfer. The focus on general "rules" has also been shown to increase transfer. Finally, trainees receive simple self-management instructions in setting specific "homework" objectives and reinforcements to increase transfer. Part of this may include a self-assessment 6-week follow-up questionnaire. This gives the trainee a concrete evaluation to prepare for, which may provide some additional incentive.

Summary

Mediated Learning Modules (MLMs) appear to have a number of potential procedural advantages including standardization of treatments, high volume delivery of psychological services, lower costs than individual or group treatment, high convenience and availability, individualization of treatments, self-instructional delivery, and experimental control for studying training methods and skills identification research. The rapid expansion of low-cost videotape machines for use in homes and organizations may further compound some of these advantages for research, production, and distribution. Yet all of these procedural and delivery advantages are of little value if MLMs cannot be demonstrated to provide an adequate amount of behavior change on targeted therapy-related skills. Media has been shown to be an effective means of delivering many other types of training (c.f. Jamison, Suppes, & Wells, 1974, and Thelen, et al., 1979). The experiments which follow are all related to testing the hypothesis that self-instructional MLMs with design features (described above) based on learning principles can be an effective means of delivering training for skills which have traditionally been in the realm of clinical psychologists.

EVALUATING THE EFFECTIVENESS OF SELF-INSTRUCTIONAL MEDIATED LEARNING MODULES (MLMs)

The basic hypothesis of this series of nine experiments is that brief self-instructional MLMs are capable of producing greater effects on self-management and interpersonal behaviors than attention-placebo treatments. There are certain common research strategies which were utilized in most or all of the nine experiments to be described. These strategies and some of the reasons for their choice are described below.

Approximating a "Real" University Counseling/Training Situation

The experiments were designed to approximate a real university counseling/training situation in as close a fashion as possible. The real clinical situation in which the MLMs were designed to be used was a college counseling center in which students would respond to flyers, word of mouth, referrals, etc. to complete these MLMs. Thus in selecting subjects traditional subject pools were explicitly avoided in all cases. In all nine experiments the class announcements and flyers for recruit subjects heavily emphasized the treatment aspect of the experiment and were similar to flyers which would later be used for "real" training. In some cases students were prescreened for self-reported low skills in the target area. During the actual treatment, the experimenter only minimally communicated with the students. This is somewhat analogous to how a media center staff person might assist the students. In some experiments the students were treated in groups, in others they were treated individually. This too could be representative of the "real world" clinical situation.

Use of Various Attention-Placebo Groups as Control Treatments

According to Bergin (1971), "It has been clearly demonstrated that placebo effects in psychotherapy are real . . . and "It is essential, whenever classical outcome studies are done, that an attention-placebo control condition be induced . . . ". Thus we included various types of placebo groups -- videotaped lectures on similar subjects, highly similar tapes leaving out key treatment procedures, and "live" group counseling -- discussion focusing on the same target areas. No "waiting-list" or other "no treatment" groups were used for two reasons. First, it was not deemed necessary due to the well-accepted finding that placebo groups generally produce greater results than no treatment groups. Second, it is hard to imagine what "no treatment" would consist of in this setting in which subjects were given certain entering instructions and questionnaires, given 1-2 hours of treatment, and then tested. Obviously, students expecting a clinical treatment and receiving none who also had to wait around for 1-2 hours before being tested would not be in a "no treatment" condition. In fact a great deal of anger might be provoked causing unpredictable effects.

Posttest-Only Control Group Experimental Design

The (randomized) posttest-only control group design (Campbell and Stanley's design 6) was chosen over others including the pretest--posttest control group design (their design 4). There is a misconception among some clinical and educational researchers (unlike experimental psychologists) that design 6 is unacceptable. Usually they base this judgement upon the fear that the groups might not

be equivalent when they start treatment. Apparently they do not understand the basic purposes and assumptions of inferential statistical tests. Campbell and Stanley (1963) dispel this myth, "Design 6 is usually to be preferred to Design 4 unless there is some question as to the genuine randomness of the assignment. Design 6 is greatly underutilized in educational and psychological research" (p. 26).

A second aspect of our design was the emphasis upon an immediate post-test as opposed to delayed follow-up testing. There is no dispute that follow-up data is essential in the long run. However, our goals were to test whether or not fairly specific and brief self-instructional MLMs could have any effect on self-management and interpersonal behavior. Because of the time-limitations associated with the Thesis program, longer follow-up studies were not practical. It was assumed that if this series of studies were to find positive immediate results, then perhaps others with more resources for long term follow-up would be able to complete that type of research. In the history of development of new psychological treatments the early experiments have usually tended to present data on shorter term effects. Once that is demonstrated, then attention turns to retention, transfer and generalization.

For example assertion training, which has been a very popular field of investigation, has had relatively few good follow-up studies (Rich & Schroeder, 1976). This is despite the fact that assertion training is typically performed over much longer periods than are the individual self-instructional MLMs.

The nine experiments which were completed will be described one at a time. Four will be described in more depth so that the reader may get a clearer picture of the experimental procedures used. Since there is a great deal of procedural similarity between the experiments and space conservation is important, the last five experiments are described more briefly. The overview of the results of all nine experiments will be summarized in the general discussion section. The four experiments chosen for greater descrpition were not necessarily the best designed nor did they have the best results. Instead, they were a good sampling of the experimental methods used.

Experiment 1: Effects of an MLM on Assertive Refusal Behavior and Transfer of Training

Ryan (1976) was interested in discovering whether or not assertive behavior could be taught successfully using Mediated Learning Modules (MLMs) with structured learning features such as statement of rules, modeling, rehearsal, and feedback. He was particularly interested in whether or not the subjects could actually perform the target assertive behaviors in role-play simulations of common social situations. In order to test this hypothesis he created a videotaped MLM entitled, "How to Refuse Unreasonable Requests" and compared it to a "placebo" tape on a similar topic.

Method

Subjects

Subjects were recruited from undergraduate (non-psychology) courses at California State University, Long Beach by means of class announcements telling them of the opportunity to participate in a brief 2 hour workshop on how to become better at standing up for their rights. They were told that research was being done on the workshop. The 20 subjects were randomly assigned to two equal-sized groups.

Instruments

Behavioral measures. Subjects were asked to respond verbally to two situations presented by research assistants. One related to cutting in line and the other to paying an unreasonable auto bill. Both situations were used previously by McFall and Marston (1970). Students' responses were tape-recorded and later rated by three pre-trained independent raters. The raters were unaware of the purpose of the experiment or which group the subjects were in. Interrater reliability was .82. The four behavioral rating scales were (1) inclusion of an "understanding/caring" response, (2) inclusion of a "self-disclosure statement", (3) inclusion of a "refusal statement", and (4) "overall assertiveness", which included nonverbal dimensions.

Questionnaire measure. Ryan also used the Conflict Resolution Inventory (McFall and Lillesand, 1971) to compare effects. This test consists of selecting responses to common situations where assertive responses would be appropriate.

Procedure

Students volunteering for the experiment were contacted by phone to arrange a time to complete the training. After the times were established, each subject was randomly assigned to a treatment condition. When the subjects arrived they read a one-paragraph explanation of the experiment. They were all told that the purpose was to help them increase their communication skills. Then the subjects viewed one of the following two tapes.

Mediated Learning Module (MLM) Group. This was the 40-minute self-instructional videotape entitled, "How to Refuse Unreasonable Requests" created by Ryan. He had incorporated a number of the training features discussed earlier includ-

ing statements of key rules and steps, modeling, behavior rating and rehearsal, feedback, and brief transfer training. The tape was stopped at appropriate places for subjects to rehearse assertive responses to simulated situations in accordance with instructions contained on the tape. There was no additional training or explanation offered by the experimenter in order to better simulate natural self-instructional uses of the tape.

Placebo tape group. In order to control for attention-placebo effects the treatment tape was compared to a 30-minute commercially produced videotape which was currently being used in the library to teach "assertiveness". The presenter designated his approach as "Gestalt" and used a lecture-persuasion approach focusing upon general concepts and exercises. That tape also included opportunities for discussion and was therefore stopped at appropriate times. The placebo tape made minimal use of structured learning procedures contained in the MLM tape. After the subject viewed one of the tapes, he was taken to a small room and asked to make responses to the two behavioral rating situations described above. Each subject completed the Conflict Resolution Inventory before being debriefed.

Results

The Mediated Learning Module (MLM) group outperformed the Placebo group on three of the four behavioral measures including (1) inclusion of an "understanding-caring" response [$t(18)=7.24$, $p<.001$], (2) number of refusal responses [$t(18)=3.43$, $p<.01$[, and (3) overall assertiveness [$t(18)=3.43$, $p<.01$]; but not on (4) number of self-disclosure responses [$t(18)=1.28$, n.s.]. The MLM group also outperformed the Placebo group on the Conflict Resolution Inventory [$t(18)=3.34$, $p<.01$].

An effort was made to test for transfer of performance to new situations. The first behavioral test situation was similar to a behavior rehearsal situation used during training in the MLM group; the second test situation was very dissimilar to any used in training. MLM group subjects performed as well on the second training situation as on the first for all of the behavior rating scales [overall score $t(18)=.676$, n.s.]. Placebo group subjects also did no better in one situation than the other [overall score $t(18)=.142$, n.s.].

Ryan also made an attempt to assess any differences in credibility of the two treatments during a debriefing following the post-testing. One way he did this was to explain to all students in both groups what a control group was and then ask them if they thought that they had been in a control group. Not one student in either group thought that they had been. He also asked students to rate the "expected usefulness" of the treatments. He found no significant differences between the two treatments. However, there was some anecdotal evidence in the free response questions which may have indicated that the placebo tape (which was commercially produced) was preferred.

Discussion

In general, the results of the experiment support Ryan's hypothesis that Mediated Learning Modules following a structured learning format are more effective than a placebo tape in regard to both the four areas of behavioral performance discussed above and the Conflict Resolution Inventory (CRI) measures. Also, mild positive evidence of some transfer of training was found. This evidence included

effects measured by the CRI and evidence of transfer to a dissimilar role-playing situation. One weakness in the experimental design may be possible lack of equivalency of the MLM and placebo tapes on some possibly confounding variables such as length of treatment, trainer, amount of talk, etc. However, this experiment was not an attempt to carefully evaluate the effectiveness of these particular treatment methods. It was designed only with the purpose of evaluating the effectiveness of the entire package versus non-specific treatment controls.

Thus any difference in effects of the two tapes must be accounted for by the difference in the content of the two.

Experiment 2: Effects of an "Assertive Rights" MLM on Knowledge of Rights, CRI Scores, and Delayed Transfer of Training

Mandelberg (1977) was interested in finding the degree to which teaching subjects four "assertive rights" would increase subjects' knowledge of their rights in specific social situations, would increase assertive responses as measured by the Conflict Resolution Inventory (CRI), and increase performance of assertive responses in a delayed telephone refusal situation as McFall and Marston (1970) had done.

Mandelberg created an attention-placebo group to act as the control. The length of conversation between subjects was not equal to that of the experimental group. Ryan had done neither. Mandelberg's tape also differed from Ryan's in that Mandelberg focussed upon teaching self-statements using a cognitive restructuring approach whereas Ryan had focussed upon teaching overt social refusal responses.

Method

Subjects

Twenty students were recruited from announcements to undergraduates similar to the one Ryan had used. The students were randomly assigned to two groups of 10 per group.

Instruments

Behavioral measure. The behaviors being taught could not be directly assessed since they were self-statements concerning one's rights in various social situations. However, Mandelberg created a Rights Assessment Questionnaire in which subjects were presented with 8 situations. Subjects were to write a description of what personal rights were violated. Three pretrained, independent judges rated responses according to preestablished criteria. Pairwise interrater reliabilities ranged from Pearson r=.82 to .87.

Conflict Resolution Inventory. The Conflict Resolution Inventory (CRI) described above was also administered to measure transfer of training effects and effects of knowledge of rights on refusal behavior.

Delayed transfer of training measure. Each subject was contacted by phone approximately two weeks later and asked to participate in a group eyeblink experiment. The caller escalated demands and unreasonableness of the requests as the phone call proceeded. Callers recorded the number of "no" responses, the length of the phone call, and the ultimate acceptance or rejec-

tion of the request.

Procedure

Procedures were almost identical to the ones used by Ryan except for the content of the tapes, the test situations, and the fact that the 10 subjects in each group met together in one meeting.

Mediated Learning Module (MLM) group. Mandelberg created a 32-minute videotape entitled, "Your Four Assertive Rights", which utilized structured learning techniques described above. One of his transfer training techniques consisted of first having subjects close their eyes and imagine social situations in which they commonly had problems followed by an attempt to relate the four assertive rights to these situations.

Placebo tape group. Mandelberg also created a 32-minute placebo tape in which points from Rollo May's book, Man's Search for Himself were lectured upon. Subjects were asked at different points to close their eyes and relate material just presented to their own lives in a manner that paralleled the covert rehearsal situations in the MLM tape. After the experiment, subjects were given the tests and then contacted two weeks later for the telephone test.

Results

The MLM group outperformed the Placebo group on behavioral ratings of responses to the Rights Assessment Questionnaire [$t(18)=6.61$, $p<.001$]. The MLM group also outperformed the Placebo group Conflict Resolution Inventory with a mean of 26.4 as opposed to 20.7[$t(18)=2.15$, $p<.05$]. However, there was no significant difference between the two groups on the telephone refusal situation test [$t(18)=.64$, n.s.].

Discussion

Mandelberg's results were consistent with those obtained by Ryan concerning the effectiveness of MLMs for obtaining behavior change and some transfer of training to the CRI. The behavior differed in that Ryan measured an overt interpersonal response and Mandelberg measured a report of a covert response. Mandelberg, however, failed to find transfer to the delayed telephone refusal situation. McFall and Marston had also failed to find results in this situation. Mandelberg's placebo tape established control for training length and general practice. However, Ryan's was better controlled for experimenter bias, since Mandelberg did the lecturing on both tapes.

Experiment 3: Effects of an MLM on Conversational Skills and Perceptions by Strangers

The next experiment concerns social skills training for initiating and establishing friendships. Ikeguchi (1977) used an experimental paradigm which allowed for greater realism in the testing situation than had the previous experiments. Subjects were instructed how to talk to strangers. The strangers they talked with were "naive" college students (rater-conversationalists) recruited for the purpose of conversing with the subjects and then rating their impressions of the subjects. This paradigm allowed testing for not only the

acquisition and performance of the skills being taught; but, in addition, allowed for partial testing of the effectiveness of the skills being taught. For example, did learning these particular target behaviors lead to more favorable impression of subjects by strangers? The previous two experiments had related only to the acquisition and performance--not the effectiveness--of the target behaviors. Ikeguchi tested the effectiveness of an MLM for teaching a variety of skills in making initial contacts with strangers.

Method

Subjects

Twenty-two undergraduates were randomly assigned to two equal-sized groups after having been recruited using class announcements in a manner similar to the previous two experiments.

Instruments

Behavioral measures of acquisition performance. Following the experiment, each subject was taken to two separate rooms where he/she conversed with a male stranger in one and a female stranger in the other. The strangers were "naive" college students used as "rater conversationalists". These undergraduate students were recruited to talk with the subjects and rate their impressions of them. The rater conversationalists (two males and two females) were unaware of both the purpose of the experiment and which treatment group subjects represented.

The rater-conversationalists were given a typed page of instructions explaining when and where to go for the experiment, where to sit in the testing room, and the conditions under which each student would be brought to them. The instructions for talking with the students were as follows:

> You and the student you talk with are on an equal basis, as if you had just met on campus. You can talk about anything except the experiment itself. Try not to dominate the conversation--try not to talk more than 50% of the time. If there is a lull in the conversation don't initiate talking, wait for the other person to talk. Be friendly, be yourself.

One-half of each treatment group went to two rater-conversationalists and one-half went to the other two. Each subject would talk to the first rater-conversationalist in a room alone and then be led to a second room to talk with a second rater-conversationalist. The conversations lasted three minutes each; were tape-recorded; and were later rated by three different pretrained raters who rated them independently on the following behavior rating scales: (1) number of present moment statements, (2) number of compliments, (3) number of open-ended questions, (4) number of initiations of conversation by subjects after three second lull's, (5) number of times they said the rater-conversationalist's name. The raters were unaware of the purpose of the experiment or which group the subjects were in.

Measures of effects on rater-conversationalists. After a conversation, each rater-conversationalist rated his/her perceptions and attitudes toward the subject on a 10 point rating scale for each of the following: (1) liking for

person, (2) interest in talking with person again, (3) how relaxed person seemed, (4) likelihood of accepting social invitation from person, (5) person's interest in him/her, (6) person's friendliness. Since the rater-conversationalists were "average" college students, it was hoped that this might be some indication of the value of the skills taught.

Follow-up self-report measure of friendliness. About two weeks after the training, all subjects were phoned by the experimenter who asked them how many times in the past week they had, (1) initiated conversations with strangers and, (2) initiated greetings (such as "hello") to strangers.

Procedure

After students volunteered, they were randomly assigned to one of 4 groups. Two treatment and two placebo groups were counterbalanced for training session times and rater-conversationalists. On training days, subjects were read a very brief introduction which stated that the purpose of the experiment was "to teach you about interpersonal communication especially as it relates to meeting new people". Verbal interraction between the researcher and the student was minimal throughout the experiment. Then they were shown one of the following videotapes.

The Mediated Learning Module (MLM) group. This group viewed a 35-minute tape created by Ikeguchi entitled, "How to Meet and Talk to Strangers". It used training methods similar to those described in the introduction to teach target behaviors such as utilizing free information, smiling, and asking open-ended questions.

Placebo tape group. These subjects viewed a tape especially created by Ikeguchi and Merkeley which was 32 minutes long consisting of discussions balancing the behavior rehearsal sessions of the MLM group. The content of this tape was primarily a lecture with discussion questions on some general principles of human communication such as the value of openness and honesty.

After the tape was finished the experimenter read the following prepared statement.

> Now you will have more practice talking with new people. [Students had already practiced with their partners via instructions on both MLM and control tapes.] Each of you will converse with two students who have volunteered to help out with the workshops.
>
> You will go one after the other into two offices in this center, and have conversations of three minutes each--two conversations total. You can talk about anything except the workshop itself. After this the workshop is completed and I thank you for participating. Are there any questions?

They were told that the conversations were being recorded. After the two 3-minute behavioral test situations, subjects were dismissed. Approximately two weeks later, the subjects were phoned and asked the follow-up questions. Placebo subjects were also given an opportunity to view the treatment tape (as all subjects in all the experiments were allowed to do).

Results

Behavioral Measures

The MLM group students outperformed Placebo group students on 4 of the 5 behavioral rating scales. There were no significant differences on (1) the number of present moment statements [$\chi^2(1)=2.6$, n.s.], but there were significant differences on (2) the number of compliments [$\chi^2(1)=8.91$, $p<.01$], (3) the number of open-ended questions [$\chi^2(1)=28.25$, $p<.001$], (4) the number of conversation initiations after 3-second pauses [$\chi^2(1)=4.12$, $p<.05$], and (5) the number of times the trainee said other's name [$\chi^2(1)=15.11$, $p<.001$].

Measures of Effects on Rater-Conversationalists

There were no significant differences between groups on any of the six rating scales administered to the rater-conversationalists.

Two-Week Follow-Up Self-Report Measure of Friendliness

There was no significant difference between the treatment groups in the number of reported conversations initiated during the preceding week [MLM $M=5.0$, Placebo $M=2.4$; $t(14)=1.54$, n.s.]. There was, however, a significant difference in the number of reported greetings initiated [MLM group $M=16.4$, Placebo $M=4.3$; $t(12)=1.905$, $p<.05$].

Discussion

The results supported the hypothesis that subjects were able to perform the targeted behaviors in situations of talking with "real" strangers. However, there was no evidence to support the hypothesis that the performance of these behaviors made any difference in rater-conversationalists' perceptions of the subjects. This finding was not encouraging even though the sample of raters and perceptions sampled was very limited and may not be representative. There was some evidence of transfer of training. Follow-up reports found that students reported more greetings but not more initiating conversations with others.

Experiment 4: Effects of an MLM on Male Dating Behavior and Perceptions of Simulated Female Dates

Carlson (1978) was interested in helping low-frequency dating males improve their dating skills. He hypothesized that both conversational skills and some type of subtle skills which more specifically arouse female sexual interest were involved in achieving successful dating outcomes.

Carlson was thus interested in both discovering what behaviors are important in arousing female sexual interest and testing the effectiveness of an MLM for helping low-frequency male daters perform these behaviors. Most previous "dating skills training" approaches have focused upon skills less directly related to arousing sexual responses in women. Carlson began with a pilot survey of college women asking questions such as, "What is the difference between a man whom you like as a friend and one that interests you sexually?" His informal results led him to hypothesize that sexual interest can be increased by such behaviors as giving compliments about a woman's appearance, touching her hair, sitting closer,

talking about sex-related topics, and responding honestly, humorously, or with a compliment to potentially embarrassing situations.

Carlson adopted basically the same experimental paradigm used by Ikeguchi (1977), except that he used a "live" trainer/therapist group as an attention-placebo control group.

Method

Subjects

Subjects were recruited with class announcements. Interested men were pre-screened by a telephone interview to obtain low-skill, low-frequency daters. The criteria included having less than four dates in the past four years and self-ratings of more than average anxiety about talking with women and dating. The 30 male subjects were randomly assigned to equal-sized experimental and control conditions.

Instruments

Behavioral measures of acquisition and performance. Carlson used Ikeguchi's procedure for having a rater-conversationalist interact with subjects after the experiment. The rater-conversationalist was a female college student with whom subjects were instructed to interact as if on a date with her. All interactions were videotaped and lasted 4 minutes. During the first 2 minutes, the rater-conversationalist was instructed to be "friendly" and on a cue during the last two minutes they were to act "disinterested". Carlson devised a checklist of behaviors which were consistent with training objectives for each of the two segments. Part I of the checklist included items such as "sits 4 inches or closer", "compliments appearance", "arm around shoulder", and "eye contact/10 seconds". Part II included items which were appropriate to her coolness such as "laughs at self", "changes topic of conversation", "leans away", and scored negatively items related to inappropriate physical advances. Each part of the behavior rating checklist was scored as a sum of the number of items checked. The raters were two pretrained independent observers who did not know the purpose of the experiment or which group the subjects were in. Each rater rated all responses.

Carlson also designed a test for measuring subject knowledge of dating skills. This "Dating Skills Questionnaire" included descriptions of 9 common dating situations in which students chose one of four possible responses. They also rated their expected anxiety level in each of the situations. The test was designed to be related to learning objectives for the MLM.

Subject efficacy expectations of future dating behavior. Carlson was unable to do a follow-up study to measure actual dating behavior differences between the groups. However, he was interested in seeing if there were any differences in expectations about future dating behavior between the two groups. This type of measure of "efficacy expectations" has been shown in other situations to be an important predictor of actual behavior (Bandura, 1977). Carlson asked subjects to rate themselves on a 1-10 scale for each of the following concerns (1) if they expected to date more often, (2) how much more relaxed they expected to be, (3) whether they could tell if a date is interested in them, and (4) their confidence about being physically intimate.

Ratings of perceptions by female college students. A 10-point rating scale consisting of 6 items was designed to assess the effects of the target behaviors on the perceptions of college females. The rater-conversationalist rated each subject immediately following her interaction with him. Two additional college student raters rated their own reactions to the subject after viewing the videotaped interactions. The six scales included (1) how relaxed and confident he felt, (2) how well she did/would enjoy being with him, (3) how well she did/would enjoy talking with him, (4) how interested he seemed in her, (5) excluding his appearance--how much she would want to go on a date with him, (6) if on a date, the degree she might be willing to be physically intimate with him (e.g. kissing, hugging).

Procedure

Subjects who had passed the preselection criteria of low-frequency, low-skill dating were randomly assigned to one of four groups -- two MLM and two live-placebo treatment groups. Each condition consisted of two groups so that the times of training could be counterbalanced. On arrival at the Counseling Center, they went to their prescribed group where they were given one of the following two treatments.

Mediated Learning Module (MLM) group. Carlson created a 50-minute MLM entitled, "Dating -- How to Have a Good Time" using the structured learning techniques described in the introduction. The entire training session consisted of two parts. The first part included using Ikeguchi's MLM, "How to Meet and Talk to Strangers", and the second part consisted of Carlson's tape. Both parts included stops for behavior rehearsal as per instructions contained on the videotapes.

Live-placebo group. Since several successful replications demonstrating the positive effects of MLMs upon performance when compared to videotaped placebo control treatments had already taken place, Carlson wanted to compare his treatment to that of a live counselor who was doing his best to help students increase dating skills. A counselor at the University Counseling Center was the therapist-trainer who volunteered to lead a 2-hour dating workshop, but who did not know the purpose of the experiment or the nature of the other treatment. The counselor and the MLM focussed upon similar topics including "what women like and dislike on a date", "when might physical intimacy be appropriate", "how does one initiate physically intimate acts", and "how would one react when a woman reacts negatively to their advances".

The therapist-trainer used a considerable amount of group discussion and shared experiences in dealing with the same topics being dealt with in the MLM group through structured learning methods (described in the introduction). The length of training of both treatment conditions was approximately the same.

Following the training session, subjects were given a social skills dating questionnaire and then escorted into a room to participate in the 4-minute role-play situation with the female rater-conversationalist. Subjects were given the following instructions:

> This will be a 4-minute role-play interaction between you and a female partner. Both of you will be role-playing a couple on a date. You are to try and apply any of the information you have gained in this workshop. Even though this is a role-play situation, try to act as though you were

actually on a date.

After the testing period, subjects were debriefed and released.

Results

Behavioral Measures of Acquisition and Performance

Carlson calculated the statistics on the behavioral rating checklist for each judge independently. The results showed high agreement. The MLM group subjects outperformed the Live Placebo group subjects on Part I of the test [MLM M=8.07, Placebo M=4.20; $t(28)$=3.68, $p<.001$ for Judge I; and MLM M=8.26, Placebo M=5.00; $t(28)$=3.30 $p<.001$ for Judge II] and Part II of the test [MLM M=1.86, Placebo M=1.00; $t(28)$=1.86, $p<.05$ for Judge I; and MLM M=2.33, Placebo M=1.00; $t(28)$=2.26, $p<.05$ for Judge II]. On the Dating Skills Questionnaire questions -- designed to evaluate subject knowledge -- MLM subjects also outperformed Placebo subjects [MLM M=30.27, Placebo M=26.01; $t(28)$=4.01, $p<.001$]. However, there was no significant difference on the questions related to expected anxiety in these situations.

Table I

Behavioral Ratings of Performance (Carlson, 1978)
in Conversing with Female Stranger

Test Part I Condition	Judge 1		Judge 2	
	Mean Rating	$t(28)$	Mean Rating	$t(28)$
Part I				
MLM	8.07	3.68**	8.26	3.30**
Live Control	4.20		5.00	
Part II				
MLM	1.86	1.86*	2.33	2.26*
Live Control	1.00		1.00	

*$p<.05$
**$p<.001$

Subject Expectations of Future Dating Behavior

Subjects in the MLM group showed higher expectations on all four questions related to their future dating behavior: (1) expected dating frequency [MLM

Median=7.0, Placebo Median=3.0; Mann-Whitney $U(15, 15)=48.5$, $p<.01$] (2)expected relaxation, [MLM Median=7.0, Placebo=5.0; $U(15, 15)=29.5$, $p<.001$] (3) expected ability to tell if their date is interested in them, and [MLM Median=8.0, Placebo = 3.0: $U(15, 15)=23.0$, $p<.001$] (4) expectations of being physically intimate [MLM Median=8.0, Placebo=3.0; $U(15, 15)=23.0$, $p<.001$].

Ratings of Perceptions by Female College Students

The three college females rated the MLM subjects more favorably on 11 of 18 scales concerning their perceptions of the subjects. The other 7 were not significant. The female who served as the rater-conversationalist rated the MLM subjects higher on all 6 of the scales. See Table 2. The first female observer who only watched the interactions on videotape rated the MLM subjects significantly higher on 1 of the 6 scales. The second female observer rated the MLM subjects higher on 4 of the 6 scales. See Table 2.

Discussion

Carlson's hypothesis that MLM subjects would perform more target dating behaviors in a simulated dating situation than live-placebo control group subjects was supported. Subjects in the MLM group demonstrated higher knowledge of dating skills on the Social Dating Questionnaire. Also, they displayed higher self-efficacy expectations that they would both date more and perform better in the future. Questions about expectations of future anxiety produced mixed results. Carlson's results were consistent with the results of the previous experiments showing increased acquisition/performance in simulated or real life situations as a result of MLM training. His control group was probably more representative of what many students would encounter if they enrolled in a "dating" group in many university counseling centers.

Carlson also found some positive and encouraging results on the indirect effects of training on the perceptions of college females. Rarely is this type of outcome evaluated in studies of social skills training. Usually, the value of the skills is assumed. The sample size of the female observers was too small to generalize to all college females. However, his results are encouraging. More research of this nature should be completed employing highly representative and well-defined samples of persons in the trainees' natural environment. Carlson did not do any follow-up study, which was regrettable. Self-efficacy expectations appear to be related to future behavior (Bandura, 1977). Therefore, his finding of positive effects on self-efficacy is encouraging.

Table 2

Median Ratings of Impressions by Rater-Conversationalist and Two Observer-Rater Females

Question/ Condition	Rater Conversationalist		Female 1		Female 2	
	Median	U(15, 15)	Median	U(15, 15)	Median	U(15, 15)
Question #1: How relaxed and confident did this person seem?						
MLM	7.0	25.0**	8.0	97.5	6.0	54.0**
Live Control	3.0		7.0		4.0	
Question #2: How well did you enjoy being with this person during this role-play interaction?						
MLM	8.0	12.0***	8.0	126.5	6.0	61.5*
Live Control	3.0		6.0		4.0	
Question #3: How well did you enjoy talking with this person?						
MLM	7.0	3.0***	7.5	76.5	6.0	67.0*
Live Control	3.0		7.0		5.0	
Question #4: Did this person seem interested or concerned with your feelings?						
MLM	7.0	15.0***	7.0	49.0**	5.0	82.5
Live Control	4.0		5.5		6.0	
Question #5: Would you go out on a date with this person?						
MLM	8.0	13.0***	8.0	95.0	6.0	99.0
Live Control	3.5		6.0		5.0	
Question #6: Would you mind being physically intimate with him?						
MLM	7.0	10.0***	8.0	U=77.5	6.0	U=70.0*
Live Control	3.0		7.0		5.0	

*$p < .05$
**$p < .01$
***$p < .001$

Experiments 5 through 9

Experiments 1-4 were selected for a more thorough presentation so that the reader could get an insight into more of the details of the experimental methods used. These first four experiments were selected because they were somewhat representative of the entire series of 9 experiments. They were not necessarily the 4 best experiments. The following five experiments will be described more briefly largely because of space limitations, but also because they tend to simply provide more evidence which is similar to evidence already presented. However, there are interesting variations in target behaviors, some differences in other experimental conditions.

Experiment 5: Self-Disclosure Statements

Merkley (1977) compared the effectiveness of a 50-minute videocassette MLM entitled, "I'd Like to Know You Better--Using Self-Disclosure to Improve Conversational Skills" on 19 college students. The MLM included most of the design features described in the introduction and stressed techniques for generating topics of conversation, for recognizing the "depth" of the conversation, and for self-disclosure in a "tit-for-tat" manner. The control tape included lecture and discussions on general topics related to achieving closer interpersonal relationships. Methodologically it was essentially a replication of the procedure used by Ikeguchi. He used the same recruiting instructions, experimental procedures and instructions (except the actual MLM used) and the same instructions to rater-conversationalists.

Behavioral Measures. Merkley found that MLM subjects significantly outperformed subjects who viewed a placebo tape on 2 of 6 behavioral rating scales --total percentage of time talking [MLM $\underline{M}$=.53, Placebo $\underline{M}$=.38; $\underline{t}(17)$=3.19; $\underline{p}$ <.01] and number of self-disclosure statements [MLM $\underline{M}$=2.16, Placebo $\underline{M}$=1.70; $\underline{t}(17)$=2.04, $\underline{p}$<.05]. Interrater reliability averaged .91.

Outcome Effects on Others. Merkley also found some positive evidence that the skills being taught were effective in making positive impressions on the 4 rater-conversationalists. The MLM subjects received significantly higher ratings than Placebo subjects on ratings of "How friendly did the person seem to you?" [MLM $\underline{M}$=8.81, Placebo $\underline{M}$=7.55; $\underline{t}(17)$=3.22, $\underline{p}$<.01]. However, they did not significantly outscore Placebo subjects on any of the other 8 scales. He also performed a correlational analysis to see how responses actually made during the post-test conversations correlated with rater-conversationalist ratings irrespective of the group the subjects were in. He found all correlations performed to be significant at the .05 level or better. Correlations above $\underline{r}$=.50 were significant at the .01 level. Examples include $\underline{r}$=.57 between "percentage of time talked" and "how friendly" the subjects seemed; $\underline{r}$=.70 between the number of self-disclosure topics generated and "how interested in you", $\underline{r}$=.51 between the number of self-disclosure topics and "how confident person seemed". In general he found that ratings of friendliness and ratings of self-confidence were related to amount of talking, amount and variety of self-disclosures, and talking about the "here and now".

Experiment 6: Responses to Criticism

LeBoff (1977) compared the relative effectiveness of a 60-minute videotaped MLM entitled, "Negative Inquiry--A Method For Dealing Effectively With Criticism"

to a videotape including lecture and discussion on a general related topic. Subjects were 25 college students randomly assigned to the two groups. They had been recruited by class announcements telling of the opportunity to participate in a brief workshop to help increase one's ability to deal with criticism. The training methods were consistent with those outlined earlier and the content of the MLM treatment tape stressed conveying a calm, concerned response of listening without presenting one's own point of view until the criticizer had been thoroughly quizzed for specifics.

Behavioral Measures. Subjects role-played various situations with specially trained role-players in which they were expected to respond to criticism for several minutes to each situation. Experimental group subjects outperformed controls on the total score of the behavior rating [$t(23)=2.70$, $p<.01$].

Generalization Measure. LeBoff also compared the degree of transfer of training to situations unlike those used in training. She found that MLM subjects outperformed Placebo subjects in the situation most similar to training [$t(23)=3.51$, $p<.01$] and in the first dissimilar situation [$t(23)=1.90$, $p<.05$]. In the second and most dissimilar situation the significance level was marginal [$t(23)=1.69$, $p<.10$].

Experiment 7: Discriminating Between Assertive, Nonassertive, and Aggressive Responses

Fletcher (1977) compared the effectiveness of a 40-minute videotaped MLM to help students discriminate between assertive, non-assertive, and aggressive responses to a tape in which a lecture and discussion on some Gestalt principles were given. The subjects were 20 college students recruited by class announcements describing an opportunity to participate in a brief workshop to help people learn to stand up for their rights.

Questionnaire Measure. There were no significant differences between the groups in scores of assertiveness on the Jakubowski-Spector Discrimination Test.

Behavioral Measures. Subjects were individually given two role-playing tests of assertive behavior immediately following training with trained role-players. The first situation was of someone cutting in line; the second was of being overcharged for an auto repair. The experimental subjects outperformed the controls on behavioral ratings of verbal directness [$t(18)=3.98$, $p<.001$] verbal respect [$t(18)=2.71$, $p<.01$] and total score [$t(18)=4.14$, $p<.001$].

Experiment 8: Cognitive Restructuring--Making More Positive Self-Statements

Brown (1977) compared the effects of a 30-minute self-instructional videotaped MLM entitled, "How To Feel Better About Yourself," to a placebo videotape. The 28 college student subjects were recruited by means of announcements stressing a brief workshop in learning how to increase one's self-confidence. They were randomly assigned to treatments. The treatments were given simultaneously in different rooms by experimenters only minimally acquainted with the experiment and its purpose. The tape stressed techniques similar to those used in cognitive behavior therapy: i.e. techniques to increase awareness of negative self-statements, to learn how to construct alternative positive statements, and to practice using these techniques in situations where subjects commonly tended to overly criticize themselves.

Questionnaire and Behavioral Measures. There were measurement problems, since the behaviors of interest were covert self-statements in response to real-life situations. Brown constructed a test in which subjects were to imagine themselves in various life situations and then write what they would say to themselves in these five situations. These situations were similar to those used in assertion training literature. The responses were then rated by trained raters. The results favored the experimental group [$t(26)=6.28$, $p<.001$]. Experimental subjects also outperformed controls in a test of knowledge of some of the main ideas taught in the experimental tape [$t(26)=1.71$, $p<.05$]. However, there was no significant difference in performance on the Social Avoidance and Distress Scale (Watson and Friend, 1969).

Experiment 9: Problem-Solving

Keeley (1977) compared the effects of an audiotape/workbook MLM to a tape with highly similar content, except that subjects were not taught enough specifics to really do what was necessary to use the problem-solving model being taught. The model she used is a synthesis of models from Carkhuff (1974) and Stevens and Gerlach (1977). Forty college students were recruited by announcements to non-psychology students offering help in personal problem-solving. The students were randomly assigned to two groups.

Behavioral Measures. Since the behavior of interest was problem-solving methods, subjects were given two common, complex problems to solve. The first was of a person trying to decide where to live. Students were to role-play the thinking processes of the person described in the situations using the best problem-solving methods they could think of. In the second problem they were to state and solve a real problem of their own. The responses were then rated by trained raters. Experimental condition subjects outperformed controls on 9 of the 12 rating scales including attitude toward problem [$t(38)=3.94$, $p<.01$], problem identification [$t(38)=2.98$, $p<.01$], seek variety of information sources [$t(38)=2.24$, $p<.05$], assess quality of information [$t(38)=2.98$, $p<.01$], quantity of alternatives [$t(38)=3.21$, $p<.01$], clarity of alternatives [$t(38)=2.53$, $p<.01$], identifying relevant value dimensions [$t(38)=2.60$, $p<.01$], planning [$t(38)=3.58$, $p<.001$] and verification [$t(38)=2.80$, $p<.01$]. Problem definition, ranking alternatives, and screening alternatives were not significantly different. There were no significant differences in the ratings by the two raters.

General Discussion

The results of the nine experiments have provided consistent support for the hypothesis that self-instructional MLMs are more effective than various placebo treatments in producing higher ratings for performance of target interpersonal and self-management skills in behavioral role-play situations. There is some evidence related to the additionally important issues of generalization, maintenance, and the effects of the target behaviors in achieving desired interpersonal outcomes. The evidence for outcomes other than post-test behavioral performance is mixed, but encouraging. Future research should address itself to these important issues.

A summary of the results of the nine studies is presented in Table 3. The table is organized according to the type of dependent variable which is reported.

Behavioral Measures of Immediate Performance

The behavioral ratings were made by "blind" ratings of tape recorded responses in situations which were designed to be as close to naturally occurring situations as possible. Behavioral frequency counts or ratings were made of various target behaviors. Out of a total of 36 behavioral ratings, 27 were significant in the predicted direction, 9 were not significant, and none were significant in the opposite direction. Of the 27 which were significant, 9 were significant at the $p<.001$ level, 12 were significant at the $p<.01$ level, and 6 were significant at the $p<.05$ level. Four of the 9 experiments found significant differences on all of the scales measured. The poorest ratio of significant results to total scales was .33. Note that it is not reasonable to argue that use of multiple *t*-tests can account for these results. Thus, using a variety of attention-placebo control conditions and other conditions which might effect results--the evidence supports the hypothesis that self-instructional MLMs can effect behavioral performance for a wide variety of interpersonal and self-management behaviors (at least for college students).

Questionnaire Measures

Out of the 11 questionnaires administered, 8 were significant in the predicted direction, and 3 were not significant. Of these 6 were significant at the $p<.001$ level, 1 was significant at the $p<.01$ level and 1 was significant at the $p<.05$ level. Some of the questionnaire measures were standardized tests. On the Conflict Resolution Inventory (CRI), 2 of 2 results were significant. The Social Avoidance of Distress (SAD) scale and the Jakubowski-Spector Discrimination tests were each administered once. No significant differences were found on either of these two tests. This pattern of results on the standardized tests is difficult to interpret.

Retention and Transfer of Training

Retention was not measured in any of the studies. To measure retention, all that would be necessary is to retest the subjects at a later date. Some attempt was made to measure transfer of training. Ryan (1977) found no significant differences between the role-playing situation similar to training and the one which was highly dissimilar to training on any of the four behavioral rating scales. LeBoff (1977) found that the MLM students outperformed the controls in the first dissimilar but not second dissimilar situation. Ikeguchi (1977), Merkley (1977), and Carlson (1978) attempted to insert realism and hence measure

Table 3

Summary of Data From Nine Experiments Comparing Self-Instructional MLMs vs. Placebo Groups

Experiment		Behavioral Ratings/Frequencies n.s.	p<.05	p<.01	p<.001	Questionnaire	Generalization	Follow-up	Skill Outcome Measures
Ryan (1977) Assertive refusal	20	1	0	2	1	CRI, p<.01		none	none
Mandleberg (1977)	20		none			"Rights" p<.001 CRI p<.05	No difference in studies	yes n.s.	none
Ikeguchi (1977) Conversational skls.	22	1	1	1	2	none	none	Greetings p<.05 Conversations n.s.	n.s. on 6 scales
Carlson (1978) Initial dating intimacy	30	0	1	0	1	Knowledge p<.001 Expected anxiety n.s. Expected dating behavior 4 scales p<.001 on each scale	none	none	Ratings by simulated date and female observers: 6 ratings p<.001 2 ratings p<.01 3 ratings p<.05 7 ratings n.s.
Merkley (1977) Self Disclosure	18	4	1	1	0	none	none	none	1 scale p<.01 8 scales n.s. Also, supportive correlational evidence
Fletcher (1977) Assertive, Non-Assertive aggressive behavior	20	0	0	1	3	J.S. Discrimination n.s.	none	none	none
LeBoff (1977) Response to criticism	25	0	0	1	0	none	1st dissimilar situation p<.05 2nd dissimilar situation p<.10	none	none
Brown (1977) positive self-statements	28	0	1	0	1	SAD n.s.	none	none	none
Keeley (1977) Problem solving	40	3	2	6	1	none	"real" problem included in behavioral analysis	none	none
TOTALS	223	9	6	12	9	6-p<.001 1-p<.01 1-p<.05 3-n.s.	1-p<.05 1-p<.10 plus Mandelberg (1977) and Keeley (1977)	1-p<.05 1-n.s.	6-p<.001 3-p<.01 3-p<.05 21-n.s.

Number of Subjects:
Mean N per experiment=24.7

Behavioral Ratings:
3-not significant, 27 significant in predicted direction, 0-significant in other direction

Mean ratio of significant tests to total number of tests: Overall Mean=.77, Range = .33 to 1.00 (4 experiments had 1.0 ratios).

transfer by assessing students' conversational performance in talking to strangers. The results were positive. The positive results on 2 of the 4 standardized tests may also be taken as limited positive evidence of generalization. Only one study measured follow-up. Ikeguchi (1977) used a follow-up questionnaire to make some assessment of reported changes in behavior. Experimental subjects reported more greetings but not more conversations than controls. Mandelberg (1976) found no significant differences in a follow-up telephone behavioral test. Thus, overall, the results of the research on transfer of training in the experimental setting has been positive; whereas the one follow-up produced mixed results. Much more work needs to be done in this area. However, considering the general brevity of training obtaining some positive results has been encouraging.

Effects of the Target Skills

Ikeguchi (1977), Merkley (1977), and Carlson (1978) all used an experimental paradigm which is useful for studying the effects of target behaviors on other persons. This research paradigm has the potential to help answer questions such as "Do people giving more free information really make a better impression on others, date more, etc. as a result of receiving training in giving more free information?" Ikeguchi, Merkley, and Carlson all assessed the effects of training on ratings by "naive" strangers to whom the subjects talked. Strangers rated subjects on self-confidence, liking, desire to be with the person again, friendliness, etc. Differences between groups were found on only one scale (friendliness) out of the 14 studied for Ikeguchi and Merkley. However, Carlson found significant and large differences on 11 of 18 measurements taken. Also Merkley performed a correlational analysis of subjects' scores irregardless of treatment group. There were statistically significant ($p < .05$) correlations on all of the scales relating the target skills to the perceptions by the strangers. This finding supported the hypothesis that some of these target behaviors have the desired effects on the strangers' ratings. However, the samples of the strangers were very small and hence severely limit generalization about how others might be affected by interacting with persons performing the target behaviors. These studies are better seen as only initial attempts for providing the type of research which needs to be done in the future.

Generalizability of Findings and Related Research Issues

A number of recent investigators (e.g. Cone, 1977) have emphasized the importance of considering the dimensions along which research findings can be generalized to other populations, settings, behaviors, etc. Each of the seven categories described below may be considered one important set of dimensions along which the results of our studies may be compared to other research results and potential research questions which have yet to be investigated. The research surveyed is by no means comprehensive, but provides illustrative data points so that our results and the gaps that are left for future research will be put into better perspective. Theoretically, each unique combination of dimensions would form a unique research question. Some of these would probably be trivial; however, there must still be a staggering number of combinations remaining.

Type of Media (videotape, audiotape, computer-based, text, or live). The Jamison, Suppes, and Wells (1974) review of the literature is the most widely cited. They dealt primarily with the type of media used and found that the type of media makes little overall difference if the content is held constant. All types--videotape, audiotape, computer-based text, live etc.-- were capable of producing effects on learning which could be long-lasting for academically-related and some other target behaviors. Our research showed positive results for both videotape and audiotaped learning modules. Both were often supplemented with written handouts.

Mode of instruction (live instruction, "maximal contact" mediated instruction, "minimal contact" self-instruction or self-instruction). In most media studies the mediated portion of the class or unit was presented within a broader framework of instructions by a teacher or experimenter. We refer to this as "maximal contact" mediated instruction. Use of media in a maximal contact situation may be contrasted at the other extreme of true self-instruction in which a trainee centers a media center in response to a flyer, checks out an MLM, views it alone, and checks it in when completed--with no additional contact.

Our MLMs are often used in a fully self-instructional fashion, they are often used by referral from a counselor who will later review with the person what he learned and possibly assign "homework" relevant to the MLM, and they are used in groups. In the research presented above, the MLMs were presented in a "minimal contact" situation. The experimenter introduced the treatment, escorted students, and turned the TV monitor on and off. Nevertheless, his presence probably had an important influence upon students' practicing as directed by the tapes. Also, some of the MLMs have instructions to practice role-playing with a partner if one is available. If one is not, then trainees are instructed to practice following covert rehearsal instructions. In our research partners were always available when overt interpersonal practice was requested by the MLM. In practice students have partners in group use of MLMs and are encouraged to bring partners by counselors and written materials in the center. However, many students do not bring partners. It is not known how the presence of partners affects the outcomes of the MLMs. That would be an interesting research question. There is good reason to believe that the presence of partners might not be necessary, since covert behavior rehearsal has often been found to be effective--even as effective as practice with partners (e.g. Kazdin, 1979).

Other reviewers have also found that minimal contact type self-instructional materials have been effective in teaching interpersonal and self-management skills. Glasgow and Rosen (1978) reviewed the self-help book research literature and found that there is mixed evidence of their effectiveness in some instances. Their overall conclusion was that much more research needs to be done. There is more evidence concerning the effectiveness of audio and videotaped materials. The Whelen, et al. (1979) review has been mentioned on "symbolic modeling". They reached a favorable conclusion about the effects of media in what were frequently minimal contact situations. Also, more recently, Rakos and Schroeder (1979) have presented evidence for the effectiveness of a self-instructional audiotape/workbook 10-week assertion training group on behavioral role playing tests. There was no follow-up however.

Instructional Methods. This is probably the most complex "dimension" and in reality is really a large collection of variables. Our MLMs were based upon a model that might be characterized as steming from theories labeled as "learning",

"social learning", "social behavioralism", "structured learning", or "direct instruction" theory. A sample of some of the variables we believe to be important include focus upon teaching abstract principles, use of the "direct instruction" sequencing principles (including positive and negative symbolic modeling), overt and covert behavior rehearsal, symbolic feedback and reinforcement, use of transfer instructions, and attention to expected natural consequences. There is, of course, a research literature related to each of these important instructional variables. Our assumption is that these variables operate in our self-instructional MLMs in a manner which is parallel to the way they have been shown to operate in "live instruction" or in controlled laboratory studies on behaviors which may or may not have been similar to our target behaviors. Whelen, et al. (1979) reviewed the research on the relative effectiveness of some of these variables in mediated presentations. From their review it may be concluded that symbolic modeling, rehearsal, and symbolic reinforcement all appear to be promising. The study of the relative effectiveness of instructional method related variables is particularly important. Self-instructional MLMs appear to be an excellent vehicle for studying these variables, because of the experimental control which is possible with the use of media.

Only one main conclusion about the relative effects of treatment variables may be drawn from our research. It appears that our results were not due to a number of "non-specific" treatment variables for which controls were attempted. Some of the controlled variables included presence of a "live" trainer, trainee expectations, length of training, discussion, the use of media, experimenter bias, production quality of the media, and genuine attempt by the control group presenter to change behavior. Most of these variables were repeatedly controlled for across experiments in a variety of ways.

Trainees. There are many individual difference variables which could be used as a basis for questionning how results of MLM research could be generalized to other populations. Our samples consisted of college students with self-perceived needs for improving themselves in the area of targeted behaviors. The samples included a wide range of ages, both sexes, and an unknown variety of IQ levels, personality variables, and the like. One issue which is frequently raised is the question of whether the subjects are from a "clinical" population or from the psychology subject pool. We specifically avoided the psychology subject pool. All flyers, newspaper articles, and class announcements stressed the treatment aspect of the research. Some subjects were prescreened on the basis of deficits. Therefore, we believe that our samples were somewhat representative of college students who might seek assistance from our MLMs from hearing about them through the normal channels of communication on campus. It is unknown how our results might generalize to a population like hospital patients or persons with lower educational levels. We expect that these persons would need much more assistance and structure from professionals in using MLMs. Nevertheless, MLMs might be included as part of an overall program. Sarason (1968) for example found that symbolic modeling and role-playing was effective with juvenile delinquents for teaching interview skills and reducing recivitism and at a one year follow-up. Whelen, et al. (1979) cite several studies which found symbolic modeling to be effective with psychiatric patients.

Type of target behavior. Most of the traditional studies on media effectiveness reported by reviewers such as Jamison, Suppes, and Wells (1974) have focussed upon academic-related behaviors such as math, composition, and science. Evidence is accumulating that interpersonal and self-management skills play a

key role in mental health. Staats (1963) argued persuasively for a model of behavior disorder which viewed skills as primary components of mental health. As an example Heimberg, et al. (1977) in their review cite evidence related to the importance of assertiveness skills in behavior disorders with both psychiatric and student populations. Beck (1972), Fuchs and Rehm (1977); and Zeis, Lewinsohn, and Munoz (1979) illustrated how self-management skills appear to be important in depression. Our self-instructional MLMs have included a broad variety of target behaviors which are currently the focus of much attention among clinical researchers. These include a variety of assertive behaviors, conversational behaviors, dating behaviors, problem-solving skills, and cognitive restructuring. From our results we feel confident that self-instructional MLMs can be used to teach a very wide variety of skills -- even very complex ones -- to a wide variety of people.

Type of treatment outcome. The types of treatment outcomes that have usually been assessed have been short-term effects upon the trainees' behavior, feelings, and self-perceptions. These are obviously important types of outcomes and there is quite a bit of evidence that self-instructional MLMs can have positive effects on these types of outcomes. Our results were quite supportive and consistent with other studies on these issues. However, comments on our results relevant to the issues of retention and transfer have already been made. We had limited "mixed but encouraging" results. This is similar to conclusions in the literature in many areas of psychological services in general and behavior therapy in particular. For example, both Rich and Schroeder (1976) and Heimberg et al. (1977) stated as main conclusions the need for more evidence on long-term follow-up and transfer effects of assertion training as did Thelen et al. and Rosen in their reviews on media effects. While it is important to demonstrate lasting and generalized effects, it is important to keep these issues in perspective. How much effect can we expect from 1-2 hours of training? Demonstrating measurable positive effects on performance itself is an important finding.

The other major issue on type of treatment outcome concerns the effects of treatment on other people, or other "remote" outcome variables. These issues often relate more to the utility of the target behaviors themselves than the method (or media) by which the target behaviors are acquired. Nonetheless, these issues are important. The above two reviews mentioned a need for more of this type of research. Our results of teaching conversational and dating skills to students produced "mixed but encouraging" results on the perceptions of the rater-conversationalists. The literature as a whole has produced a great deal of research relative to the effects of some behaviors on other people (e.g., self-disclosure, empathetic listening) but little or none on others. Examples of other types of more remote outcome measures include grade point average, attrition, recidivism, income, job productivity, and marital success. MLMs provide an excellent vehicle for studies on these types of treatment effects because they allow standardization of treatment.

Type of outcome measure. Methods for measuring treatment outcomes may vary along a number of dimensions. Some of these include self-report vs. direct or indirect observation, unvalidated vs. validated, role-play/simulation vs. "real" cues, obtrusive vs. unobtrusive observation, subjective vs. objective and abstract vs. concrete concepts. The best measure is usually assumed to be a measure which has the second-mentioned of each of the above characteristics. An example would be hiding a tape recorder in a trainee's apartment so that his interactions with his date could secretly be recorded. Later the number of times he asked her open-ended questions could be objectively counted. The problem is that this type of measure is usually too expensive and unethical.

Our measures were intentionally mixed. Realism may have been fairly high in our situations where trainees were simply asked to talk with strangers (when conversational skills were being assessed). Realism was probably lower in situations where students were asked to pretend that they were engaged in some hypothetical assertive refusal situation. Performance in behavioral role-playing situations has been the standard method of measuring assertive behavior, but has recently been questioned on the basis of validity in predicting behavior in real situations. For example Bellack (1979) and Wessberg (1979) both found mixed but somewhat disappointing results when they attempted to measure the validity of role-play tests in predicting behavior unobtrusively observed in waiting rooms. However, both of these studies suffer from some serious flaws which may have decreased the correlations. In both cases the similarity of the situations along critical stimulus dimensions can be questioned (e.g., was an assertive response really appropriate given the circumstances?). Even the behavioral rating dimensions were not the same. Nevertheless, these articles do point to the need to validate role-play tests. Ours were not validated outside the experimental situation. Our studies were completed before these articles were published. If the validity of role-play tests proves to be a serious problem, then most of the literature on interpersonal skills training must be reexamined. More of this type of research is obviously needed.

The key issues relevant to the efficacy of self instructional MLMs for teaching social skills is (1) whether persons learn the skills and (2) whether they can and/or do perform them in their natural environment. The ability to perform them in role-playing situations demonstrates acquisition irregardless of what happens in other situations. Therefore role-play performance tests are important per se. Whether or not people actually perform them in their natural environment is probably related more to motivationally related cues and reinforcements operating in the specific situation. Therefore MLMs should probably attempt to deal with motivational variables as well as skill training.

Several authors have demonstrated that MLMs can be effective in getting trainees to perform acquired target behaviors under "natural" or unobtrusive measurement conditions. For example, Stevens (1973) compared the effects of covert behavior rehearsal instructions plus positive imagined outcomes (CRP) to the same instructions with neutral outcomes (CRN) to attention-placebo instructions. The two covert rehearsal tapes could be considered crude 40-minute self-instructional audiotapes. They consisted of a series of scenes in which trainees imagined themselves approaching strangers. There were 24 college students per group who were recruited via appeals for persons who were shy and wanted to improve abilities to talk with strangers. They were randomly assigned to groups. There were no differences between groups on debriefing questions related to perceived "helpfulness of the treatment", believability of scenes, or interest level of the tapes. After training subjects were given Eysenck's PEN Extraversion Scale and some other self-report questions. Trainees were also audiotaped in pairs during pre- and post-test questionnaire sessions without their knowledge. Since there was extra time for students to talk once they were finished with their tests and since all students were "strangers", these observations were considered unobtrusive measures of natural situations. After extensive debriefing on this point, only 3 trainees in the CRP, 1 in the CRN, and 2 in the placebo groups had any suspicion that there may have been some observation for talking.

The results of the analysis of covariance showed an overall difference on all treatment efficacy measures -- the PEN extraversion scale [$F(2)=5.73$, $p<.01$]; a

special constructed behavioral self-efficacy type scale [$F(2)=5.92$, $p<.01$]; and the change in percentage of time talked [$F(2)=3.74$, $p<.05$]. There were no differences between the two treatment groups which differed only in imagined outcomes. However, the covert rehearsal groups combined significantly outperformed the placebo group on all measures using Scheffe multiple comparisons tests.

Conclusions

There is a wide gap between the behavioral research institute and the community clinic. There are a number of applied treatment methods which have proved to be successful within the field of clinical psychology. Yet the treatments typically administered in community agencies, counseling centers, etc., may not be greatly affected by this knowledge. High quality dissemination of new effective treatments seems to run into many problems. How many counselees have the opportunity to visit the Oregon Research Institute for family therapy or see Wolpe for assertion training? Is there anyone in their area who can provide these treatments? If so, it may cost $60 per hour. Can they arrange their hours to fit the available times? These are real problems which prevent effective mass delivery of needed high quality psychological services. Dissemination usually proceeds by reading, word of mouth, and diminished returns training (A trains B who trains C, etc.).

It is time to explore innovative alternatives for the dissemination of new treatments and for delivery of psychological services. Self-instructional Mediated Learning Modules have been used for academic content, for occupational skills and for many other uses. In general they have been shown to be as effective as live teaching. The use of self-instructional Mediated Learning Modules is an alternative for delivering psychological treatment that may have the potential to deliver effective training at a relatively low cost to a large number of people. MLMs may be used on a self-referral basis, coordinated with therapy, or used in classes. MLMs may be produced for "in-house" use or commercially distributed on a large scale. They may be accessible in centers open for 60 to 70 hours per week. As MLM delivery systems supplement other modes of psychological services, it is likely that both the overall quality and quantity of the service delivery systems will be enhanced. With the introduction of low-cost home/office video systems further research and development of MLMs seems especially timely.

In addition the MLMs provide a very promising method of increasing standardization of treatments for the purpose of improving basic research on treatment methods and skills identification.

On the more cautious side, it must be remembered that self-instructional MLMs have not been shown to be effective for persons other than volunteer college students. Neither have they been shown to have lasting results or transfer readily to one's natural environment. Also, much needs to be learned about which specific variables within the treatments may account for the most effect. Presumably these are the variables which were derived from learning psychology (such as modeling, behavior rehearsal, discrimination training and reinforcement).

Future research should concentrate on some of these issues. Also, it would be interesting to try combining several self-instructional MLMs into large treatment packages. This might be a more effective way of achieving more lasting results and measurable transfer of training than the brief 1-2 hour training in the studies presented. The overall conclusion is that the results of the research on self-instructional MLMs and their potential theoretical, methodological and practical advantages appear to make them an excellent area for future research and development.

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